

## **CHAPTER 5**

### **BUILDING A BETTER AMERICA**

#### **Upgrading the Urban Environment: Rock Creek and Potomac Parks**

One of the most beautiful areas in the Nation's capital is Rock Creek Valley which runs from north to south through the entire District of Columbia. In 1867, Major Nathaniel Michler, the first Army Engineer to head the federal government's Office of Public Buildings and Grounds, awakened interest in the Valley by proposing it as a new site for the White House. Praising the region's "primeval forest and cultivated fields, its rocks clothed with rich ferns and mosses, its repose and tranquility, its light and shade", he saw it as a refuge for the Chief Executive from the malarial river front and an unsightly marsh called the Potomac Flats.

When in 1884 the prominent Washington banker Charles Glover began to press Congress for money to develop Rock Creek valley as a park, he found allies in the Corps of Engineers. Chief of Engineers Brigadier General Thomas L. Casey headed the commission that bought the land. Development of the park began in 1901 under Colonel Theodore A. Bingham, one of Michler's successors. Bingham believed the park would provide fresh air and places of recreation for crowded city dwellers and serve as an "emerald setting for the beautiful city." Other engineers shared his vision, hiring famed landscape architect Frederick Law Olmsted, Jr., to create the basic plan of Rock Creek Park and building Rock Creek and Potomac Parkway to link the green areas together.

Meanwhile, the Engineers had transformed the unsightly Potomac Flats. Beginning in the 1880's they had dredged the river channel, dumping the spoil on the Flats, thus creating new land to the south of the Mall. To spread the spoil, Washington District engineer Major Peter C. Hains used methods developed in levee work on the Mississippi River. In 1897 Congress dedicated some 628 acres of reclaimed land, henceforth called West Potomac Park and East Potomac Park ordering that it to be "forever held and used as a park for the recreation and pleasure of the people."

Bingham himself provided Potomac Park with gardens and athletic fields. Under his successors, the Tidal Basin, planned and built by the Corps to flush the Potomac and so help prevent pollution, became the center of a nationally known beauty spot as the Engineers directed the planting of Tokyo's gift of Japanese cherry trees around the basin.

It is not surprising that names in the parks recall the Engineer contribution: Beach Drive in Rock Creek Park for Captain (later Major General) Lansing H. Beach who built it, and Hains Point at the southernmost tip of East Potomac Park for Hains, the engineer who raised it from the waters. The Corps' work in Washington shows what engineering can achieve in sensitive hands to provide improved health, recreation, and beauty for crowded city dwellers.

Albert E. Cowdrey

**Source:** Albert E. Cowdrey, *A City for the Nation*.

## **Captain William Ludlow and the Preservation of the Yellowstone Wonderland**

Although recreation has only recently become a major part of the Corps of Engineers waterway program, involvement of Corps personnel in the preservation and enhancement of recreational opportunities goes back over one hundred years to Yellowstone's first days as the original national park. It goes back to a time of such rapid western development that the explorer's frontier actually overlapped the arrival of tourists in the West. In 1875, when Captain William Ludlow entered the Yellowstone wonderland at the head of a reconnaissance party, there were the sightseers, like harbingers of the future, carving their initials, scattering their rubbish, and breaking off pieces of rock formations.

Alarmed by what he saw, Ludlow spent most of his time pleading with visitors to respect nature's work. He stopped one woman, already poised with a shovel over a mound formed over thousands of years by the mineral deposits of a bubbling spring, just before she did irreparable damage. Even his frantic efforts were far from adequate. "Miracles of art," he wrote, "can be ruined in five minutes by a vandal armed with an axe, and nearly all the craters show signs of [this] hopeless and unrestrained barbarity."

Ludlow's exploration did not amount to much, but his efforts on behalf of the wonderland did. In his report, he proposed several ways to preserve the park. All the measures he suggested—calling in

the Army, letting troops patrol the land, and have the Engineers build roads—were adopted. Thanks to Ludlow, who provided the blueprint for saving the Park, Yellowstone remains among the crown jewels of America's scenic wonders.

Frank N. Schubert

**Source:** (1) EP 1130-2-401, Recreation Statistics, April 1973. (2) Kenneth H. Baldwin, *Enchanted Enclosure: The Army Engineers and Yellowstone National Park* (Washington: Historical Division, OCE, 1976). (3) William Ludlow, "Report of the Reconnaissance from Carroll, Montana, to the Yellowstone National Park, made in the Summer of 1875," *Annual Report of the Chief of Engineers, 1876*.

## **Emergency Power: the Nuclear Power Barge *Sturgis* in the Canal Zone**

One of many ways the Corps of Engineers contributed to the development of new energy sources was through the joint Army-Atomic Energy Commission (AEC) effort called the Army Nuclear Power Program. A striking example of Engineer work under this program occurred during 1968 in the Canal Zone. A water shortage jeopardized both the efficient operation of the Panama Canal locks and the production of hydroelectric power for the Zone. Because of the increased traffic resulting from the closing of the Suez Canal and the Vietnam War, such vast amounts of water were required to operate the locks that the water level on Gatun Lake fell drastically during the December - May dry season and necessitated curtailment of operations at Gatun Hydroelectric Station. Serviced by plants with a combined output of approximately 100 megawatts, the Zone had insufficient reserve capacity to permit its largest generator to shut down without interrupting power supply to military or civilian consumers.

In this emergency the Army Engineers dispatched to Gatun Lake the world's first floating nuclear power plant, the *Sturgis*. Having a capacity of 10 megawatts, the *Sturgis* had been designed by the Philadelphia Engineer District and christened in 1964 in memory of Lieutenant General Samuel D. Sturgis, Jr., former Chief of Engineers, who had died on 5 July of that year. The Corps had trained the crew at Fort Belvoir. Towed from its home base at Gunston Cove on the Potomac River, the *Sturgis* was connected to the Panama Canal Company power grid and began producing electricity on 5 October 1968. To help out further, the *Andrew J. Weber*, a diesel-

fueled power barge of 20 megawatts capacity was deployed the following month.

These two barges not only contributed to meeting the Canal Zone's power requirements but also made possible the saving of vast quantities of water that otherwise would have been needed to operate the hydroelectric power station. The over one trillion gallons saved between October 1968 and October 1972 were enough to permit fifteen additional ships to pass through the locks of the Canal each day. The *Sturgis* and the *Weber* had demonstrated in this emergency an ingenious Engineer response both to an energy crisis and to the need for water conservation.

Kenneth J. Deacon

**Source:** Kenneth J. Deacon, "The U. S. Army Engineers—Pioneers of Nuclear Power" (Draft, 1975).

## **Energy for America: Charles Keller and Niagara Falls**

The falls of the Niagara River are one of the great scenic wonders of the world. Nevertheless, until the 20th century Americans marred their beauty and damaged their potential as a source of power. Factories poured refuse into the river above the falls, and cheap hotels sprang up along the banks. Local governments parceled out the right to use the Niagara's water to mill owners, who diverted such quantities that the flow over parts of the Falls was reduced by as much as 8 1/2 inches. Though the mills were often grossly inefficient, mill owners, instead of making the best use of the water they already had, competed with one another to divert more. In 1895, electric power production began, increasing still more the demand for water.

An improvement in the region's appearance began in 1885 when New York State established a park above the Falls. In 1906 the Federal Government stepped in. Congress instructed the Secretary of War—and consequently the Corps of Engineers—to issue permits to users of the Niagara's water. The mission of the Engineers was to regulate diversion in order to protect the navigability of the river and the Fall's scenic grandeur.

Major Charles Keller was one of the men who did much to preserve the beauty of the Falls and bring about a more efficient use of the power resources of the Niagara River. As head of the Corps' Lake Survey, he began a systematic study of the region. Sixty-five gauges made available a wealth of information regarding the river's depth and flow to be used in judging the merits of applications for

permits to use the water. Through its regulatory power, the Corps was able to persuade utility companies to generate maximum energy without excessive use of water. After the United States and Canada set up the International Joint Commission in 1908, work on the river expanded as Keller and other engineers supplied technical information to assist both nations to make the best use of their common property. But greater efficiency was by no means the whole story. Hoping to see increased beauty accompany more effective use, Keller pushed for a national park to be laid out along the river, to be financed with permit fees paid by industrial users of water. Long after Keller left the Lake Survey and the Niagara region, he continued to work and write in behalf of his goals for the Falls and the river.

In time he became involved in energy matters on a much wider scale. During the First World War, as the demand for electric power soared, federal officials began to fear that power shortages would occur in the heavily industrialized Niagara region and in other areas as well. At the suggestion of Keller and civilian experts, Secretary of War Newton D. Baker created a Power Section in the War Industries Board, staffed largely by Engineer officers. In 1908, Keller became National Power Administrator, guiding a program aimed at assisting the war effort. Before Keller left for France to serve as Deputy Chief Engineer of the American Expeditionary Forces, he had time to help establish the policies which guided the future development of the American power industry. After the war, Congress reshaped the National Power Administration into the Federal Power Commission. Now a permanent part of the government, the Commission continued the work that Keller and others had begun.

Albert E. Cowdrey

**Source:** (1) Buffalo District History. (2) Charles Keller, "Electric Power During the First World War," *The Military Engineer*, 17 (1925), 372 - 77 and 462 - 68. (3) *ARCE*, 1909, 1, 939 - 41.

## Combating Unemployment in the Great Depression

Recent emphasis on stimulating employment recalls the efforts of an earlier administration to put people back to work. The stock market crash of October 1929 and the great depression that followed confronted the United States with its worst domestic crisis since the Civil War. By 1933, when President Franklin D. Roosevelt took office, some thirteen million people, nearly 25 percent of the labor force, were jobless. Banks had failed, local governments had gone bankrupt, and thousands of hard-pressed souls had left home to

roam the country in the uncertain hope that life might be better somewhere else. Organized relief, still overwhelmingly private and local, was inadequate to deal with the pervasive human misery.

Calling for "action now," Roosevelt declared in his inaugural address: "Our greatest primary task is to put people to work." He proposed to treat "the task as we would treat the emergency of war." During the first "Hundred Days" of the new administration, a cooperative Congress authorized public works programs of unprecedented scale. Soon the public was struggling to decipher these acronyms: CCC for the Civilian Conservation Corps, which would put young men to work in the forests; PWA for the Public Works Administration, which would "prime the pump" with useful construction undertakings; and WPA for the Works Progress Administration, which would organize so-called "make-work" projects in virtually every community. In the ultimate success of these "alphabet agencies," the Army Corps of Engineers played a conspicuous role.

Engineer officers, trained for war emergencies and experienced in civil works, were "naturals" for key administrative posts. Along with hundreds of Engineer reservists who took command at CCC camps, dozens of Corps regulars served as New Deal soldiers. Among the most prominent were Colonel Philip B. Fleming, deputy administrator of Harold Ickes' PWA; Colonel Francis C. Harrington, who was Harry Hopkin's deputy and eventual successor in WPA; and Colonel Brehon B. Somervell, who headed WPA in New York City. Many Corps civilian employees were also enlisted as members of the work-relief recovery team.

A major combatant in the war against unemployment was the Engineer Department—the nationwide field organization for civil works. In the first two years of the New Deal, almost half a billion dollars was allotted to the Engineers. An organization in being, with a backlog of worthwhile projects, the Corps proved equal to the challenge. From scores of sites across the country, the call went out for workers. At Fort Peck Dam on the Missouri River, some 10,000 workers and their families flocked to the construction site. In 1935 the Corps employed 5,000 men on a tidal power dam at Passamaquoddy, Maine. The list of going projects grew steadily longer: the Bonneville Dam, the great hydropower project on the Columbia River; 14 flood control reservoirs on the Muskingum in Ohio; enlargements of the Chesapeake & Delaware and Cape Cod Canals; improvements to the Intracoastal Waterways; canalization of the Upper Mississippi; Washington National Airport; the Mount Vernon Memorial Highway; and many, many more. The program created some 70,000 jobs each year.

What these jobs meant to the needy at the time can be sensed from the words of one of them: "This was a godsend. This was the greatest thing. It meant food, you know. Survival, just survival."

The American people today are enjoying the lasting benefits of Corps projects undertaken forty years ago as part of the recovery efforts.

Lenore Fine and Harold Kanarek

**Source:** (1) *Annual Reports of the Chief of Engineers, 1934 - 40*. (2) Morton Sosna, "Army Corps of Engineers Civil Works 1918 - 1941," (MS in Historical Division). (3) Studs Terkel, *Hard Times: An Oral History of the Great Depression* (New York: Pantheon Books, 1970), 86.

## **New Life and New Hope: the Struggle for Economic Recovery in Hawaii**

On 4 March 1933, millions of Americans clustered around their radios to hear President Franklin D. Roosevelt deliver his inaugural address. Despair born of the depression gripped the country. "This nation asks for action, and action now," Roosevelt told his audience, adding that he would seek from Congress "broad Executive powers to wage a war against the emergency, as great as the power that would be given me if we were in fact invaded by a foreign foe." Action followed quickly. To relieve unemployment, Congress adopted a broad program of public works. Throughout the 48 states and in the U. S. territories and possessions, the New Deal alphabet agencies had a significant impact.

In carrying out this program, the Army Corps of Engineers played a vital role, as their record in Hawaii demonstrates. In the islands, successive Honolulu District Engineers—Major Stanley L. Scott, Major Ralph G. Barrows, and Major Peter E. Bermel—served as directors of the Public Works Administration (PWA). PWA was designed to expand employment on public works. About half of the cost of these projects was to be paid by PWA and the other half by states and municipalities. Besides creating new jobs, PWA would stimulate the economy with increased purchases of cement, lumber, and steel. Local contractors would be kept afloat. The District Engineer office reviewed applications for funds and administered all construction on both federal and non-federal projects. Between 1933 and 1939, PWA money went to improve harbors at Honolulu, Kaunakakai, and Port Allen; expand water supply systems; and build homes, schools, roads, and bridges. Scott, Barrows, and Bermel advised local communities, helping them to receive their full share of federal funds as rapidly as possible. In fixing the minimum wages on its own projects, PWA influenced salaries in other industries as well and thereby raised the Territory's standard of living.

In April 1938 the Honolulu District also became responsible for directing the effort of the Works Progress Administration (WPA) in the islands. WPA was a work relief agency which employed thousands directly on construction, educational, and artistic enterprises. Major Bermel employed 3,000 WPA workers on roads, bridges, and airfield construction projects. Bermel's chief assistant was Major Herman H. Pohl who, as one newspaper put it, brought "his keen sense of justice and humanitarian propensities" to WPA administration. Notable achievements were the extensions of the Kalihi-uka and Mokauea Roads, and the building of airfield facilities at Homestead Field on Molokai, at Hilo Airport. Engineers of the Honolulu District helped to revive the economy of the islands and to bring hope to Hawaiians in a time of despair.

Harold K. Kanarek

**Source:** Ellen van Hoften, *History of the Honolulu Engineer District, 1905 - 1965* (Honolulu: U. S. Army Engineer District, Honolulu, 1970), 28 - 30.

## **Building the First Interstate Highway**

In the popular mind, the Corps of Engineers has been closely associated with waterway transportation. Certainly navigation improvements have long been a major part of the Corps' civil works functions. The Corps has also played a significant role in railroad development. For example, it surveyed and laid track for the Baltimore and Ohio railroad, performed railroad explorations in the trans-Mississippi west, and played a part in the building of the Alaska Railroad. Moreover, few people realized that the Corps helped to build and maintain the first interstate highway in the United States.

In 1806 Congress authorized the building of a National Road west from Cumberland, Maryland. Until 1824 the Treasury Department supervised construction; then the Corps of Engineers assumed responsibility. Between 1824 and 1838, military engineers made surveys, located the right of way, and inspected the construction being done on the road west of the Ohio River. While much of the work on the road was torturous, backbreaking, and painfully slow, progress was steady. The road eventually was extended as far as Vandalia in south central Illinois, and soon became a bustling artery of east-west travel and commerce.

By the time the engineers took over supervision of the turnpike, the portion east of the Ohio River was almost impassable. In his Annual Report for 1831 Secretary of War Lewis Cass of Michigan expressed the fear that unless the road from Cumberland to the



Ohio River was repaired promptly “expensive and useful work will be ruined.” Between 1832 and 1835, Chief of Engineers General Charles Gratiot assigned Lieutenant Joseph K. F. Mansfield and Captain Richard Delafield to oversee the repairs. In many places the old road bed was so bad that the engineers had to start from scratch. Stone had to be crushed by hand, drainage culverts dug, and trees removed. But by the end of 1835, the road was in fine shape. The states through which the highway passed assumed responsibility for its management, including the collection of tolls to provide funds to keep it in proper repair.

The building and repair of the Cumberland Road through rugged mountainous country was a tremendous feat for the Corps of Engineers. The roadway connected the Atlantic coast to the hinterland. After World War II, the federal government incorporated the Cumberland Road into U. S. Route 40 to form an ocean-to-ocean highway.

Harold K. Kanarek

**Source:** (1) Forest G. Hill, *Road, Rails and Waterways: The Army Engineers and Early Transportation* (Norman: University of Oklahoma Press, 1957), 23, 37 47, 220 - 21. (2) Thomas Brownfield Searight, *The Old Pike*, ed. by Joseph E. Mores and R. Duff Green (Orange, Va.: Green Tree Press, 1971), 4, 19. (3) Harold Kanarek, *The Mid-Atlantic Engineers: A History of the Baltimore District of the U.S. Army Corps of Engineers, 1794 - 1974*, 35 - 42.